

## ABSTRACT

[82] A method, apparatus, and computer program product for analyzing gene expressions is presented. An operation is performed for determining a gene expression pattern for a condition, wherein the gene expression pattern comprises a gene expression. Next, a spatial-expression pattern is formed by selecting a chromosomal region having an exon; and associating the gene expression within the gene expression pattern with its corresponding exon. A further operation may be performed, where in the forming of the spatial-expression pattern, a spatial-expression pattern signal is created as a representation of the spatial-expression pattern. The magnitude of the spatial-expression pattern signal at any point is determined by an expression level of the corresponding exon. Spatial patterns may be identified in the signal by means of various signal processing techniques such as Fourier or Wavelet transforms. Also, multiple regions and/or conditions may be tested and their reaction patterns compared to determine related genetic regions.